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EXAMINER

TRUONG, CAM Y T

ART UNIT	PAPER NUMBER
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2162

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/842,495	Applicant(s) SHANTAVEERAAIAH ET AL	
	Examiner Cam Y T Truong	Art Unit 2162	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 July 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15, 23-59, 67 and 68 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15, 23-59, 67 and 68 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Applicant has amended claims 1, 4, 9, 12, 23, 43, 47, 52, 55 and 67 and canceled claim 31 in the amendment filed on 7/19/2004.

Claims 1-15, 23-59, 67 and 68 are pending in this Office Action.

Applicant's arguments with respect to claims 1-15, 23-59, 67 and 68 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-9, 12, 14, 43-52, 55, 57, 59, 67, 68 are rejected under 35 U.S.C. 102(e) as being anticipated by Jantz et al (or hereinafter "Jantz") (USP 6584499).

As to claims 1 and 43, Jantz teaches the claimed limitations:

"receiving a list from a fabric driver of fabric devices available to a host system, wherein the fabric driver is part of an operating system for the host system" as providing a list of storage devices available to a user on a window (fig. 6, col. 14, lines 1-30);

"receiving a request to select a subset of the fabric devices from the list" as each management protocol server 828 is queried via an RPC agent thread

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826 for its associated device properties. Upon receiving the device properties, DMA 822 builds a device connection table, which gives, for each device, a list of connections into the device. Building a device connection table for each device is represented as creating node (col. 16, lines 13-20);

“wherein each operating system device node provides a mechanism for accessing a corresponding one of the subset of fabric devices through the operating system executing on the host system” as each user can select subset data of devices as shown in figs 6&7.

“requesting the fabric driver, to create an operating system device node in the host system for each of the fabric devices in the subset not already online” each management protocol server 828 is queried via an RPC agent thread 826 for its associated device properties. Upon receiving the device properties, DMA 822 builds a device connection table, which gives, for each device, a list of connections into the device. The above information implies that a device connection table is not already online. That is reason why the system has to build a device connection table for each device. A device connection table for each device is represented as creating node (col. 16, lines 13-20).

As to claims 2 and 45, Jantz teaches the claimed limitation “prior to said receiving a request to select a subset of the fabric devices from the list: displaying the list of fabric devices available to the host system” as displaying a list of storage devices to the host system (fig. 6).

As to claims 3 and 46, Jantz teaches the claimed limitation “prior to said receiving a list: requesting the fabric driver to provide the list of fabric devices available to the host system in response to user input” as displaying storage devices to user (fig. 6, col. 13, lines 15-50).

As to claims 4 and 47, Jantz teaches the claimed limitations:

“providing a list of fabric devices available to a host system” as providing a list of storage devices available to a user (fig. 6, col. 14, lines 1-30);

“receiving a request to create operating system device nodes in the host system for each fabric device in a selected subset of the fabric devices available to the host system” as each management protocol server 828 is queried via an RPC agent thread 826 for its associated device properties. Upon receiving the device properties, DMA 822 builds a device connection table, which gives, for each device, a list of connections into the device. Building a device connection table for each device is represented as creating node (col. 16, lines 13-20);

“creating an operating system device node in the host system for each of the fabric devices in the selected subset not already online” as each management protocol server 828 is queried via an RPC agent thread 826 for its associated device properties. Upon receiving the device properties, DMA 822 builds a device connection table, which gives, for each device, a list of connections into the device. The above information implies that a device

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connection table is not already online. That is reason why the system has to build a device connection table for each device. A device connection table for each device is represented as creating node (col. 16, lines 13-20).

"wherein each operating system device node provides a mechanism for accessing a corresponding one of the subset of fabric devices through the operating system executing on the host system" as each user can select subset data of devices as shown in figs 6&7.

As to claims 5 and 48, Jantz teaches the claimed limitations:

"prior to said providing a list of fabric devices: querying a fabric nameserver for information about the fabric devices" as (fig. 8, col. 14, lines 50-67);

"receiving the information about the fabric devices from the nameserver" as (col. 15, lines 20-40);

"and compiling the list of fabric devices available to the host system" as (col. 16, lines 5-20).

As to claims 6 and 49, Jantz teaches the claimed limitation "from the information about the fabric devices, selecting the fabric devices supporting one protocol out of a plurality of protocols supported on the fabric; and compiling the list of fabric devices to list only those fabric devices supporting said one protocol" as (col. 15, lines 50-67; col. 16, lines 1-20)

As to claims 7 and 50, Jantz teaches the claimed limitation “wherein said one protocol is SCSI over Fibre Channel” as (fig. 1, col. 5, lines 35-38).

As to claims 8 and 51, Jantz teaches the claimed limitation “ wherein the list comprises address information to address the fabric devices through the fabric” as (fig. 8, col. 14, lines 50-67; col. 15, lines 1-5).

As to claims 9 and 52, Jantz teaches the claimed limitations:

“receiving a request to identify devices attached to the storage network which are available to a host system” upon locating a server, discover-monitor applet 822 requests from the server a list of all storage controllers or devices it has associated with it. After locating all the devices on the network to be managed, DMA 822 starts a monitor thread 824 for each device. The above information indicates that the system has received the request before identifying devices for monitoring (col. 15, lines 55-60);

“requesting the storage network to identify devices attached to the storage network which are available to the host system” a user may utilize DMA 822 to discover each managed device connected to network (col. 15, lines 45-50);

receiving a list of the identified devices” as detailed information window 604 preferably presents the detailed properties for each device in the management domain, based upon the particular node a user selects (col. 13, lines 40-55);

“receiving a request to on-line a subset of the identified devices” as when a user select a specific device node in a subtree containing devices, the device’s associated management interface application program is launched (col. 13, lines 45-55).

“creating an operating system device node within the host system for each of the identified devices in the subset that is not already online” as each management protocol server 828 is queried via an RPC agent thread 826 for its associated device properties. Upon receiving the device properties, DMA 822 builds a device connection table, which gives, for each device, a list of connections into the device. The above information implies that a device connection table is not already online. That is reason why the system has to build a device connection table for each device. A device connection table for each device is represented as creating node (col. 16, lines 13-20),

“wherein each operating system device node provides a mechanism for accessing a corresponding one of the subset of fabric devices through the operating system executing on the host system” as each user can select subset data of devices as shown in figs 6&7.

As to claims 12 and 55, Jantz teaches the claimed limitation “for each device successfully brought online for the host system by said creating an operating system device node, updating a persistent repository to indicate which devices are currently online” as (figs. 14-15).

As to claims 14 and 57, Jantz teaches the claimed limitation “in response to a reboot of the host system: reading the persistent repository; and online the devices indicated by the persistent repository to have been online prior to the reboot” as (col. 14, lines 14-45).

As to claim 44, Jantz teaches the claimed limitation “wherein said receiving a list, said selecting a subset, and said requesting the fabric driver to online the selected subset, are requesting the fabric driver to online the selected subset, are performed through an application executing on the host system” as (col. 14, lines 15-67).

As to claim 59, Jantz teaches the claimed limitation “storage network is part of a storage area network (SAN), wherein the device comprise storage devices” as (col. 14, lines 14-55).

As to claim 67, Jantz teaches the claimed limitations:

“viewing a list of fabric devices available to a host system” as displaying devices available to a user (fig. 7, col. 14, lines 15-20);

“selecting a subset of the fabric devices from the list” as selecting a particular device from the list (col. 14, lines 15-20).

Jantz does not explicitly teach the claimed limitation "and requesting that each of the fabric devices in the subset be brought online if not already online for use from the host system" as receiving the device properties, DMA 822 builds a device connection table, which gives for each device, a list of connections into the device. The connection to device map may be one to one, or many to one. The device connection table may include information about which management application program is associated with each device. Finally, displaying the discovered devices on a display screen. This information indicates the system bring all discovered devices on line (fig. 8, col. 16, lines 10-25),

"wherein each fabric device that is online has a corresponding operating system device node that provides a mechanism for accessing a corresponding one of the subset of the identified devices through an operating system executing on the host system" as (figs. 6 & 7).

As to claim 68, Jantz teaches the claimed limitation "prior to said viewing a list: requesting the list of fabric devices available to the host system" as (col. 16, lines 5-25).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-9, 12, 14, 43-52, 55, 57, 59, 67, 68 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jantz et al (or hereinafter "Jantz") (USP 6584499) in view of Nolan et al (or hereinafter "Nolan") (US 6640278).

As to claims 1 and 43, Jantz teaches the claimed limitations:

"receiving a list from a fabric driver of fabric devices available to a host system" as providing a list of storage devices available to a user on a window (fig. 6, col. 14, lines 1-30);

"receiving a request to select a subset of the fabric devices from the list" as each management protocol server 828 is queried via an RPC agent thread 826 for its associated device properties. Upon receiving the device properties, DMA 822 builds a device connection table, which gives, for each device, a list of connections into the device. Building a device connection table for each device is represented as creating node (col. 16, lines 13-20);

"wherein each operating system device node provides a mechanism for accessing a corresponding one of the subset of fabric devices through the operating system executing on the host system" as each user can select subset data of devices as shown in figs 6&7.

Jantz does not explicitly teach the claimed limitation " wherein the fabric driver is part of an operating system for the host system; requesting the fabric driver, to create an operating system device node in the host system for each of the fabric devices in the subset not already online". Nolan teaches that a server includes

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resources in an operating system. Each resource is represented as the fabric driver. The server also builds LUNs that are displayed to a user (figs. 24-26, col. 9, lines 33-35).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Nolan's teaching of including resources in an operating system and building LUNs for displaying to a user to Jantz's system in order to provide for heterogeneous interoperability of storage systems and protocols and provide for reliability, availability and serviceability features, all on an intelligent, purpose-built platform and maintain or access storage devices via network system easily and save time for accessing storage devices.

As to claims 2 and 45, Jantz teaches the claimed limitation "prior to said receiving a request to select a subset of the fabric devices from the list: displaying the list of fabric devices available to the host system" as displaying a list of storage devices to the host system (fig. 6).

As to claims 3 and 46, Jantz teaches the claimed limitation "prior to said receiving a list: requesting the fabric driver to provide the list of fabric devices available to the host system in response to user input" as displaying storage devices to user (fig. 6, col. 13, lines 15-50).

As to claims 4 and 47, Jantz teaches the claimed limitations:

“providing a list of fabric devices available to a host system” as providing a list of storage devices available to a user (fig. 6, col. 14, lines 1-30);

“receiving a request to create operating system device nodes in the host system for each fabric device in a selected subset of the fabric devices available to the host system” as each management protocol server 828 is queried via an RPC agent thread 826 for its associated device properties. Upon receiving the device properties, DMA 822 builds a device connection table, which gives, for each device, a list of connections into the device. Building a device connection table for each device is represented as creating node (col. 16, lines 13-20);

“wherein each operating system device node provides a mechanism for accessing a corresponding one of the subset of fabric devices through the operating system executing on the host system” as each user can select subset data of devices as shown in figs 6&7.

Jantz does not explicitly teach the claimed limitation " requesting the fabric driver, to create an operating system device node in the host system for each of the fabric devices in the subset not already online". Nolan teaches that a server includes resources in an operating system. Each resource is represented as the fabric driver. The server also builds LUNs that are displayed to a user (figs. 24-26, col. 9, lines 33-35).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Nolan's teaching building LUNs for displaying to a user to Jantz's system in order to provide for heterogeneous interoperability of

storage systems and protocols and provide for reliability, availability and serviceability features, all on an intelligent, purpose-built platform and maintain or access storage devices via network system easily and save time for accessing storage devices.

As to claims 5 and 48, Jantz teaches the claimed limitations:

“prior to said providing a list of fabric devices: querying a fabric nameserver for information about the fabric devices” as (fig. 8, col. 14, lines 50-67);

“receiving the information about the fabric devices from the nameserver” as (col. 15, lines 20-40);

“and compiling the list of fabric devices available to the host system” as (col. 16, lines 5-20).

As to claims 6 and 49, Jantz teaches the claimed limitation “from the information about the fabric devices, selecting the fabric devices supporting one protocol out of a plurality of protocols supported on the fabric; and compiling the list of fabric devices to list only those fabric devices supporting said one protocol” as (col. 15, lines 50-67; col. 16, lines 1-20)

As to claims 7 and 50, Jantz teaches the claimed limitation “wherein said one protocol is SCSI over Fibre Channel” as (fig. 1, col. 5, lines 35-38).

As to claims 8 and 51, Jantz teaches the claimed limitation “ wherein the list comprises address information to address the fabric devices through the fabric” as (fig. 8, col. 14, lines 50-67; col. 15, lines 1-5).

As to claims 9 and 52, Jantz teaches the claimed limitations:

“receiving a request to identify devices attached to the storage network which are available to a host system” upon locating a server, discover-monitor applet 822 requests from the server a list of all storage controllers or devices it has associated with it. After locating all the devices on the network to be managed, DMA 822 starts a monitor thread 824 for each device. The above information indicates that the system has received the request before identifying devices for monitoring (col. 15, lines 55-60);

“requesting the storage network to identify devices attached to the storage network which are available to the host system” a user may utilize DMA 822 to discover each managed device connected to network (col. 15, lines 45-50);

receiving a list of the identified devices” as detailed information window 604 preferably presents the detailed properties for each device in the management domain, based upon the particular node a user selects (col. 13, lines 40-55);

“receiving a request to on-line a subset of the identified devices” as when a user select a specific device node in a subtree containing devices, the device's

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associated management interface application program is launched (col. 13, lines 45-55),

“wherein each operating system device node provides a mechanism for accessing a corresponding one of the subset of fabric devices through the operating system executing on the host system” as each user can select subset data of devices as shown in figs 6&7.

Jantz does not explicitly teach the claimed limitation " requesting the fabric driver, to create an operating system device node in the host system for each of the fabric devices in the subset not already online". Nolan teaches that a server includes resources in an operating system. Each resource is represented as the fabric driver. The server also builds LUNs that are displayed to a user (figs. 24-26, col. 9, lines 33-35).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Nolan's teaching of building LUNs for displaying to a user to Jantz's system in order to provide for heterogeneous interoperability of storage systems and protocols, provide for reliability, availability and serviceability features, all on an intelligent, purpose-built platform and maintain or access storage devices via network system easily and save time for accessing storage devices.

As to claims 12 and 55, Jantz teaches the claimed limitation “for each device successfully brought online for the host system by said creating an

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operating system device node, updating a persistent repository to indicate which devices are currently online” as (figs. 14-15).

As to claims 14 and 57, Jantz teaches the claimed limitation “in response to a reboot of the host system: reading the persistent repository; and online the devices indicated by the persistent repository to have been online prior to the reboot” as (col. 14, lines 14-45).

As to claim 44, Jantz teaches the claimed limitation “wherein said receiving a list, said selecting a subset, and said requesting the fabric driver to online the selected subset, are requesting the fabric driver to online the selected subset, are performed through an application executing on the host system” as (col. 14, lines 15-67).

As to claim 59, Jantz teaches the claimed limitation “storage network is part of a storage area network (SAN), wherein the device comprise storage devices” as (col. 14, lines 14-55).

As to claim 67, Jantz teaches the claimed limitations:

“viewing a list of fabric devices available to a host system” as displaying devices available to a user (fig. 7, col. 14, lines 15-20);

"selecting a subset of the fabric devices from the list" as selecting a particular device from the list (col. 14, lines 15-20).

"wherein each fabric device that is online has a corresponding operating system device node that provides a mechanism for accessing a corresponding one of the subset of the identified devices through an operating system executing on the host system" as (figs. 6 & 7).

Jantz does not explicitly teach the claimed limitation "requesting the fabric driver, to create an operating system device node in the host system for each of the fabric devices in the subset not already online". Nolan teaches that a server includes resources in an operating system. Each resource is represented as the fabric driver. The server also builds LUNs that are displayed to a user (figs. 24-26, col. 9, lines 33-35).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Nolan's teaching of building LUNs for displaying to a user to Jantz's system in order to provide for heterogeneous interoperability of storage systems and protocols, provide for reliability, availability and serviceability features, all on an intelligent, purpose-built platform and maintain or access storage devices via network system easily and save time for accessing storage devices.

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As to claim 68, Jantz teaches the claimed limitation "prior to said viewing a list: requesting the list of fabric devices available to the host system" as (col. 16, lines 5-25).

6. Claims 10-11 and 53-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jantz et al (or hereinafter "Jantz") (USP 6584499) in view of Nolan and further in view of Blumenau et al (or hereinafter "Blumenau") (USP 6665714).

As to claims 10 and 53, Jantz and Nolan disclose the claimed limitation subject matter in claims 1 and 43, except the claimed limitation "a fabric, and wherein the host system comprises a plurality of ports to the fabric, wherein said request to identify devices attached to the storage network which are available to a host system is for devices available to the host system through a specified one of the ports, and wherein said requesting the storage network to identify devices is made for the specified port". Blumenau teaches identifying the device and the port of the device that coupled to the network (col. 7, lines 1-10).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Blumenau's teaching of teaches identifying the device and the port of the device that coupled to the network to Jantz's system in order to allow a user search/retrieve storage devices.

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As to claims 11 and 54, Jantz and Nolan disclose the claimed limitation subject matter in claims 1 and 43, except the claimed limitation "wherein the storage network comprises a fabric, and wherein the host system comprises a plurality of ports to the fabric, wherein said request to identify devices attached to the storage network which are available to a host system is for devices available to the host system through a specified set of the ports, and wherein said requesting the storage network to identify devices is made for the specified set of the ports". Blumenau teaches identifying the device and the port of the device that coupled to the network (col. 7, lines 1-10).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Blumenau's teaching of teaches identifying the device and the port of the device that coupled to the network to Jantz's system in order to allow a user search/retrieve storage devices.

7. Claims 13 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jantz et al (or hereinafter "Jantz") (USP 6584499) in view of Nolan and further in view of Carlson et al (or hereinafter "Carlson") (USP 5600791) and Basham et al (or hereinafter "Basham") (USP 6182167).

As to claims 13 and 56, Jantz discloses the claimed limitation subject matter in claims 1 and 43, except the claimed limitation "receiving from the storage network a notification that a device is no longer available; and updating the persistent repository to reflect that the unavailable device is offline". Carlson

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teaches that receipt of local failure notification message 305, local IOP manager 117 updates its system device table to indicate that optical storage device 135 is unavailable (fig. 6). Basham teaches the SCSI system having offline or status signal which indicates that a device is unavailable or offline (fig. 2).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Carlson's teaching of receipt of local failure notification message 305, local IOP manager 117 updates its system device table to indicate that optical storage device 135 is unavailable and Basham's teaching of the SCSI system having offline or status signal which indicates that a device is unavailable or offline to Jantz's system in order to provide for status propagation without the expensive human interventions, and to avoid conflicting service and maintenance efforts and to allow multiple hosts to non-concurrently utilize the same multiport device.

8. Claims 15 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jantz et al (or hereinafter "Jantz") (USP 6584499) in view of Nolan and further in view of Wieland (USP 6643748).

As to claims 15 and 58, Jantz discloses the claimed limitation subject matter in claims 1 and 43, except the claimed limitation "a Fibre Channel switched fabric comprising a plurality of Fibre Channel switches". Wieland teaches Fibre Channel switches (col. 2, lines 25-35).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Wieland's teaching of Fibre Channel switches to Jantz's system in order to connect multiple boosts to the same storage devices and to access storage devices connected to a SAN.

9. Claims 23-25, 28-30 and 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blumenau (US 6665714) in view of Nolan.

As to claim 23, Blumenau teaches the claimed limitations:

"one or more adapter ports for connecting to a fabric, wherein the fabric driver is part of an operating system for the host system" as a first port 0 is coupled to fabric network 10 (col. 6, lines 35-40);

"a fabric driver configured to interface the host system to the fabric" as (fig. 1B, col. 6, lines 15-30);

"an application configured to request the fabric driver to provide a list of fabric devices attached to the fabric that are visible to the host system through one of said adapter ports" as using either one of these interfaces, one can display listings of devices, modify relationships of devices (e.g., assign, revoke, modify privileges on storage volumes for hosts that are connected to the network), etc. Furthermore, with each of these interfaces, one can also modify properties that are associated with network devices (col. 23, lines 60-67; col. 24, lines 1-25);

“wherein the fabric driver is further configured to provide the list of fabric devices to the application in response to the request from the application” as (col. 23, lines 60-67; col. 24, lines 1-25);

“wherein the application is further configured to indicate to the fabric driver a selected subset of the fabric devices from the list to be brought online for access from the host system” as (col. 23, lines 10-45),

Blumenau does not explicitly teach the claimed limitation “wherein the fabric driver is further configured to online the selected subset of fabric devices so that the selected subset of fabric devices are accessible from the host system; wherein the fabric driver is further configured to create operating system device nodes within the host system for each device of the selected subset, wherein each operating system device node provides a mechanism for accessing a corresponding one of the subset of fabric devices through the operating system executing on the host system”.

Nolan teaches creating LUNs within the host system for each device and accessing LUNs through the operating system and selecting subset information within disks or LUNs (figs 22-24).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Nolan’s teaching of creating LUNs within the host system for each device and accessing LUNs through the operating system and selecting subset information within disks or LUNs in order to provide for heterogeneous interoperability of storage systems and protocols, provide for

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reliability, availability and serviceability features, all on an intelligent, purpose-built platform and maintain or access storage devices via network system easily and save time for accessing storage devices.

As to claim 24, Blumenau teaches the claimed limitation “ wherein the application is further configured to: display the list to a user through a user interface; and provide through the user interface for the user to select devices from the list as the selected subset of the fabric device to be brought online” as (col. 24, lines 10-67).

As to claim 25, Blumenau teaches the claimed limitation “ wherein, in response to the request from the application, the fabric driver is further configured to: query a fabric nameserver for information about the fabric devices to compile the list; wherein the nameserver maintains information identifying devices accessible throughout the fabric” as (col. 17, lines 45-67; col. 18, lines 1-25).

As to claim 28, Blumenau teaches the claimed limitation “wherein the list comprises address information to address the fabric devices through the fabric” as (figs 1-3).

As to claim 29, Blumenau teaches the claimed limitation "wherein the application is further configured to make said request to the fabric driver for a specified one of the one or more adapter ports" as (col. 7, lines 1-10).

As to claim 30, Blumenau teaches the claimed limitation "wherein the application is further configured to make said request to the fabric driver for a specified set of the one or more adapter ports" as (col. 7, lines 1-10).

As to claim 40, Blumenau teaches the claimed limitation "wherein the fabric comprises a Fibre Channel switched fabric comprising a plurality of Fibre Channel switches" as (fig. 3).

As to claim 41, Blumenau teaches the claimed limitation "wherein the fabric is part of a storage area network (SAN), and wherein the fabric devices comprise storage devices" as (col. 7, lines 1-35).

As to claim 42, Blumenau teaches the claimed limitation "a Fibre Channel protocol module configured to perform SCSI protocol operations between the host system and the fabric; and one or more Fibre Channel port drivers configured to perform transport layer operations between the host system and the fabric; wherein the Fibre Channel protocol module and the one or more Fibre

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Channel port drivers are part of an operating system kernel on the host system” as (col. 7, lines 1-35).

10. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blumenau in view of Nolan and further in view of Nolan et al (or hereinafter “Nolan141”) (USP 6466141).

As to claim 26, Blumenau teaches the claimed limitation “from the information about the fabric devices, select the fabric devices supporting one protocol out of a plurality of protocols supported on the fabric; and return the list of fabric devices to the application, wherein the list of fabric devices is a list of devices supporting said one protocol” as (col. 24, lines 10-67).

Blumenau does not explicitly the claimed limitation “wherein the fabric driver is further configured to: receive the information about the fabric devices from the nameserver”.

Nolan141 teaches receiving requests for storage transactions on the server interface, to direct the requested storage transactions to the plurality of storage devices (col. 26, lines 1-5).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Nolan141’s teaching of receiving requests for storage transactions on the server interface, to direct the requested storage transactions to the plurality of storage devices to Blumenau’s system in order to

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access storage devices for maintaining storage devices via network system quickly.

11. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blumenau in view of Nolan and further in view of Nolan¹⁴¹ and Sambamurthy et al (or hereinafter "Sambamurthy") (USP 6393489).

As to claim 27, Blumenau discloses the claimed limitation subject matter in claim 23, except the claimed limitation "wherein said one protocol is SCSI over Fibre Cannel". Sambamurthy teaches Fibre Cannel (fig. 9).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Sambamurthy's teaching of Fibre Cannel to Blumenau's system in order to allow a user to access storage device via a network system.

12. Claim 31 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blumenau in view of Nolan and further in view of Jantz.

As to claim 31, Blumenau discloses the claimed limitation subject matter in claim 23, except the claimed limitation "wherein said fabric driver is further configured to create device nodes within the host system for each device of the selected subset, wherein each device node provides a mechanism for accessing a corresponding one of the subset of fabric devices through an operating system executing on the host system." Jantz teaches each management protocol

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server 828 is queried via an RPC agent thread 826 for its associated device properties. Upon receiving the device properties, DMA 822 builds a device connection table, which gives, for each device, a list of connections into the device. The above information implies that a device connection table is not already online. That is reason why the system has to build a device connection table for each device. A device connection table for each device is represented as creating node (col. 16, lines 13-20).

It would have been obvious to a person of an ordinary skill in the skill in the art at the time the invention was made to apply Jantz's teaching of teaches each management protocol server 828 is queried via an RPC agent thread 826 for its associated device properties. Upon receiving the device properties, DMA 822 builds a device connection table, which gives, for each device, a list of connections into the device to Blumenau's system in order to connect to other devices in network system for maintaining the data storage system and increasing storage performance and/or capacity to meet new demands.

13. Claims 32-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blumenau in view of Nolan and further in view of Chow et al (or hereinafter "Chow") (USP 6594698).

As to claim 32, Blumenau discloses the claimed limitation subject matter in claim 23, except the claimed limitation "a plurality of I/O ports including the one or more adapter ports for connecting to a fabric; and a device discovery mechanism

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configured to: determine whether each of the I/O ports is connected to one or more direct attach devices or to the fabric; for each of the I/O ports connected to one or more direct attach devices, discover the one or more direct attach devices and create an operating system node for accessing each direct attach device; and for each of the I/O ports connected to the fabric, designate the I/O port as a fabric port without attempting to discover the fabric devices". Chow teaches running on the compute nodes 200 see a block interface model like a local disk for each fabric virtual disk that is exported to the compute node 200. As described earlier herein, the compute nodes 200 create an entry point to each fabric virtual disk at boot time, and update those entry points dynamically using a naming protocol established between the compute nodes 200 and the IONs 212 (col. 15, lines 15-55).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Chow's teaching of teaches running on the compute nodes 200 see a block interface model like a local disk for each fabric virtual disk that is exported to the compute node 200. As described earlier herein, the compute nodes 200 create an entry point to each fabric virtual disk at boot time, and update those entry points dynamically using a naming protocol established between the compute nodes 200 and the IONs 212 to transmit data among devices via network system/

As to claim 33, Blumenau teaches the claimed limitation "wherein said discovery mechanism is configured to execute in response to a reboot of the host system, and wherein said application is configured to execute on the host system subsequent to said reboot and said discovery process" as (col. 14, lines 20-50).

As to claim 34, Blumenau discloses the claimed limitation subject matter in claim 32, except the claimed limitation "wherein each of the I/O ports connected to the fabric comprises a Fibre Channel host adapter port" as (fig. 1).

As to claim 35, Blumenau discloses the claimed limitation subject matter in claim 33, except the claimed limitation "wherein each of the I/O ports connected to one or more direct attach devices comprises a port to a Fibre Channel private loop or point-to-point link". Chow teaches Fibre channel loop (figs. 2-3).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Chow's teaching of Fibre Channel loop to In order to negotiated between the input/output node and to de-allocating resources requested by the first node to another node.

As to claim 36, Blumenau teaches the claimed limitation "said discovery mechanism is configured to determine whether each of the I/O ports is connected to one or more direct attach devices or to the fabric by attempting to log-in to the fabric through each I/O port; wherein if the log-in fails, said discovery mechanism

is configured to designate the I/O port as a direct-attach port; and if the log-in is successful, designate the I/O port as a fabric port" as (figs. 11 & 16).

As to claim 37, Blumenau teaches the claimed limitation "a library configured to provide an interface between said application and said fabric driver, wherein the library is configured to update a persistent repository for each fabric device successfully brought online for the host system to indicate which devices are currently online" as (figs. 18-21).

14. Claims 38-39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blumenau in view of Nolan and further in view of Chow et al (or hereinafter "Chow") (USP 6594698), Carlson and Basham.

As to claim 38, Blumenau discloses the claimed limitation subject matter in claim 37, except the claimed limitation "wherein the library is further configured to: receive from the fabric driver a notification that a fabric device is no longer available; and update the persistent repository to reflect that the unavailable fabric device is offline". Carlson teaches that receipt of local failure notification message 305, local IOP manager 117 updates its system device table to indicate that optical storage device 135 is unavailable (fig. 6). Basham teaches the SCSI system having offline or status signal which indicates that a device is unavailable or offline (fig. 2).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Carlson's teaching of receipt of local failure notification message 305, local IOP manager 117 updates its system device table to indicate that optical storage device 135 is unavailable and Basham's teaching of the SCSI system having offline or status signal which indicates that a device is unavailable or offline to Jantz's system in order to provide for status propagation without the expensive human intervention, and to avoid conflicting service and maintenance efforts and to allow multiple hosts to non-concurrently utilize the same multiport device.

As to claim 39, Blumenau teaches the claimed limitation "wherein the discovery mechanism is further configured to, in response to a reboot of the host system: read the persistent repository; and request the fabric driver to online the devices indicated by the persistent repository to have been online prior to the reboot" as (fig. 3).

15. Claims 10-11 and 53-54 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jantz et al (or hereinafter "Jantz") (USP 6584499) in view of Blumenau et al (or hereinafter "Blumenau") (USP 6665714).

As to claims 10 and 53, Jantz discloses the claimed limitation subject matter in claims 1 and 43, except the claimed limitation "a fabric, and wherein the host system comprises a plurality of ports to the fabric, wherein said request to

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identify devices attached to the storage network which are available to a host system is for devices available to the host system through a specified one of the ports, and wherein said requesting the storage network to identify devices is made for the specified port". Blumenau teaches identifying the device and the port of the device that coupled to the network (col. 7, lines 1-10).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Blumenau's teaching of teaches identifying the device and the port of the device that coupled to the network to Jantz's system in order to allow a user search/retrieve storage devices.

As to claims 11 and 54, Jantz discloses the claimed limitation subject matter in claims 1 and 43, except the claimed limitation "wherein the storage network comprises a fabric, and wherein the host system comprises a plurality of ports to the fabric, wherein said request to identify devices attached to the storage network which are available to a host system is for devices available to the host system through a specified set of the ports, and wherein said requesting the storage network to identify devices is made for the specified set of the ports". Blumenau teaches identifying the device and the port of the device that coupled to the network (col. 7, lines 1-10).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Blumenau's teaching of teaches identifying

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the device and the port of the device that coupled to the network to Jantz's system in order to allow a user search/retrieve storage devices.

16. Claims 13 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jantz et al (or hereinafter "Jantz") (USP 6584499) in view of Carlson et al (or hereinafter "Carlson") (USP 5600791) and Basham et al (or hereinafter "Basham") (USP 6182167).

As to claims 13 and 56, Jantz discloses the claimed limitation subject matter in claims 1 and 43, except the claimed limitation "receiving from the storage network a notification that a device is no longer available; and updating the persistent repository to reflect that the unavailable device is offline". Carlson teaches that receipt of local failure notification message 305, local IOP manager 117 updates its system device table to indicate that optical storage device 135 is unavailable (fig. 6). Basham teaches the SCSI system having offline or status signal which indicates that a device is unavailable or offline (fig. 2).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Carlson's teaching of receipt of local failure notification message 305, local IOP manager 117 updates its system device table to indicate that optical storage device 135 is unavailable and Basham's teaching of the SCSI system having offline or status signal which indicates that a device is unavailable or offline to Jantz's system in order to provide for status propagation without the expensive human interventions, and to avoid conflicting

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service and maintenance efforts and to allow multiple hosts to non-concurrently utilize the same multiport device.

17. Claims 15 and 58 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jantz et al (or hereinafter "Jantz") (USP 6584499) in view of Wieland (USP 6643748).

As to claims 15 and 58, Jantz discloses the claimed limitation subject matter in claims 1 and 43, except the claimed limitation "a Fibre Channel switched fabric comprising a plurality of Fibre Channel switches". Wieland teaches Fibre Channel switches (col. 2, lines 25-35).

It would have been obvious to a person of an ordinary skill in the art at the time the invention was made to apply Wieland's teaching of Fibre Channel switches to Jantz's system in order to connect multiple boosts to the same storage devices and to access storage devices connected to a SAN.

Conclusion

18. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bi et al (US 6683665).

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**.

See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Contact Information

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cam Y T Truong whose telephone number is (571) 272-4042. The examiner can normally be reached on Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on (571) 272-4107. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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Art Unit 2162
1/3/2005

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